

REMARKS

The Final Office Action mailed September 3, 2003, has been received and reviewed. Claims 1 through 26 are currently pending in the application. Claims 1 through 26 stand rejected. Applicants respectfully request reconsideration of the application as proposed to be amended herein.

35 U.S.C. § 112 Claim Rejections

Claims 3, 4, 9, 10, 14 through 16, and 22 through 24 stand rejected in the Final Office Action under 35 U.S.C. § 112, first paragraph, as assertedly containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Applicants respectfully traverse this rejection, as hereinafter set forth.

Claims 16 and 24 are rejected in the Final Office Action at page 2, which states that these claims are directed to “a field emission display array and a field emission display, respectively, which are final products, having the added limitation of ‘redeposition material adjacent at least a portion of the periphery’ of the pointed tip.” The Final Office Action then states that “the specification discloses the redeposition material only in relation to the intermediate product resulting from the method step of facet etch” and that “such material is therefore unwanted in the final product.” (Final Office Action at pages 2-3).

The Amendment filed June 26, 2003 contains a discussion of this rejection and identifies language from the specification supporting these claims. In response to this discussion, the Final Office Action merely restates the rejection as follows: “[s]ince the specification does not expressly state the presence of redeposition material in the final product and only expressly states the removal of the redeposition material (paragraph 0034), the redeposition material is interpreted as being an intermediate product and is therefore not enabled in the final product.” (Final Office Action at pages 7 to 8). Applicant respectfully disagrees and submits that a consideration of the specification makes it clear that multiple embodiments of field emission tips as final products are enabled.

Paragraph 0015 of the specification describes “[o]ne embodiment of the invention for incorporating low work function materials into the field emission tips.” This paragraph describes:

The vertical columns, capped with the low work function material, are then facet etched to form an array of low work function material-tipped field emission tips. Redeposition material, comprising a mixture of material from the vertical column substrate material and the low work function material, generated by the facet etch collects in corners at junctions of the vertical columns and the base conductive substrate during the facet etch.

The specification thus discloses field emission tips having redeposition material “in corners at junctions of the vertical columns and the base conductive substrate.” Immediately following the language quoted above, paragraph 0016 begins by stating “Another embodiment of the invention for incorporating low work function materials into the field emission tips according to the present invention involves incorporating a sacrificial layer to assist the removal of redeposition material from the field emission tip.” Similarly, paragraph 0034, cited in the Final Office Action begins “FIGS. 10-16 illustrate still another embodiment for forming field emission tips according to the present invention.” The specification thus expressly discloses that there are multiple embodiments of field emission tips according to the present invention, some of these disclosed embodiments include redeposition material collected in the corners and others include features for removing redeposition material from the corners. Applicants thus respectfully submit that consideration of both the portions of the specification cited and discussed in the prior amendment and those discussed herein, demonstrates that claims 16 and 24 are clearly enabled by the specification. Accordingly, it is requested this rejection be withdrawn and claims 16 and 24 be allowed.

With respect to claims 3, 4, 9, 10, 14, 15, 22 and 23, the Final Office Action states that “the specification is not enabling for a field emission tip having a substantially vertical sidewall portion and an inclined sidewall portion with no discernable boundary between them when the inclined sidewall portion, which include the apex, comprises a low work function material.” (Final Office Action at page 3). Applicants propose to amend claims 1 and 7 to read “a periphery with an at least substantially vertical sidewall portion and an inclined sidewall portion

surrounding the substantially vertical sidewall portion” and to amend claims 11 and 19 to read “at least a first portion of the periphery being oriented substantially perpendicularly relative to the substrate and at least a second portion of the periphery being oriented at an angle relative to the substrate with the first portion surrounded by the second portion.” The objected to language “no discernable boundary between” has been removed, and it is clear the apex is not included in the “inclined sidewall portion.” Support for the claims as proposed to be amended may be found throughout the specification, including in FIGS. 4, 9 and 15. Applicants thus respectfully submit that, as proposed to be amended, claims 3, 4, 9, 10, 14, 15, 22 and 23 are enabled, and request they be allowed.

35 U.S.C. § 102(a) Anticipation Rejections

Hobart et al.

Claims 1 through 18 stand rejected under 35 U.S.C. § 102(a) as assertedly being anticipated by U.S. Patent No. 6,201,342 to Hobart et al. (hereinafter “Hobart”). Applicants respectfully traverse this rejection, as hereinafter set forth.

As set forth in the MPEP at Section 706.02(a), “[f]or 35 U.S.C. 102(a) to apply, the reference must have a publication date earlier in time than the effective filing date of the application, and must not be applicant’s own work.” Hobart issued on March 13, 2001. The effective filing date of the present application is April 26, 2000, which is the filing date of U.S. Application Serial 09/559,153, the parent application from which this divisional application was filed. Accordingly, Applicants respectfully submit this rejection should be withdrawn on this basis alone, and the claims allowed.

Further, case law and the M.P.E.P. both indicate that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Furthermore, the identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Additionally, the elements must be arranged as required by the claim, but identity of the terminology is not required. *In re Bond*, 15 USPQ2d 1566 (Fed. Cir. 1990).

With respect to independent claims 1, 7 and 11, the Final Office Action states that Hobart “discloses a field emission tip comprising a substantially vertical sidewall (nanomesa) (14) and an inclined sidewall (tip) (16)” and that “[s]ince the tips can be formed of the same material as the nanomesas and are smooth and uniform, the boundary between the nanomesa and the tip would not be discernable.” (Final Office Action at page 4).

As proposed to be amended, claims 1 and 7, now each recite: “a periphery with an at least substantially vertical portion and **an inclined sidewall portion surrounding the substantially vertical sidewall portion**” (emphasis added). Similarly, independent claim 11, as proposed to be amended, recites: “at least one substantially pointed tip including a periphery, at least a first portion of the periphery being oriented substantially perpendicularly relative to the substrate and at least a second portion of the periphery being oriented at an angle relative to the substrate, with **the first portion surrounded by the second portion**” (emphasis added). Hobart discloses an emitter tip having nanomesas and a tip grown by self assembly on the top surface 26 of the nanomesa. Hobart does not disclose “a periphery with an at least substantially vertical portion and an inclined sidewall portion surrounding the substantially vertical sidewall portion” or a “substantially pointed tip including a periphery, at least a first portion of the periphery being oriented substantially perpendicularly relative to the substrate and at least a second portion of the periphery being oriented at an angle relative to the substrate, with the first portion surrounded by the second portion.” Accordingly, Applicants respectfully submit that independent claims 1, 7 and 11 all define over Hobart. It is requested that this rejection be withdrawn and claims 1 through 18 be allowed.

35 U.S.C. § 103(a) Obviousness Rejections

Hobart et al. in View of Applicant’s Admission of Prior Art

Claims 19 through 26 stand rejected in the Final Office Action under 35 U.S.C. § 103(a) as assertedly being unpatentable over Patent No. 6,201,342 to Hobart et al. (hereinafter “Hobart”) in view of Applicant’s admission of the prior art (hereinafter “APA”). Applicants respectfully traverse this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

With respect to independent claim 19, the Final Office Action states that Hobart “discloses a field emission tip comprising a substantially vertical sidewall (nanomesa) (14) and an inclined sidewall (tip) (16)” and that “[s]ince the tips can be formed of the same material as the nanomesas and are smooth and uniform, the boundary between the nanomesa and the tip would not be discernable.” (Final Office Action at page 6).

As proposed to be amended, claim 19, now recites: “at least one substantially pointed tip including a periphery, at least a first portion of the periphery being oriented substantially perpendicularly relative to the substrate and at least a second portion of the periphery being oriented at an angle relative to the substrate, with **the first portion surrounded by the second portion**” (emphasis added). As discussed previously herein, Hobart discloses an emitter tip having nanomesas and a tip grown by self assembly on the top surface 26 of the nanomesa. Hobart does not teach or suggest a “substantially pointed tip including a periphery, at least a first portion of the periphery being oriented substantially perpendicularly relative to the substrate and at least a second portion of the periphery being oriented at an angle relative to the substrate, with the first portion surrounded by the second portion.” Nor are these elements taught or suggested in APA. Accordingly, Applicants respectfully submit that independent claim 19, as proposed to be amended, defines over the suggested combination and this rejection should be withdrawn. It is requested that claim 19, with claims 20-23 dependent therefrom, be allowed.

ENTRY OF AMENDMENTS

The proposed amendments should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application. Further, entry of the proposed amendments will certainly remove issues for appeal.


Notably, the amendments to claims 2 through 6, 8 through 10, 12 through 18, and 20 through 26 merely comprise replacement of the term "said" with "the" and, therefore, do not affect the scopes of any of these claims.

If it is determined that the proposed claim amendments do not place the above-referenced application in condition for allowance, entry thereof upon the filing of a Notice of Appeal in the above-referenced application is respectfully requested.

CONCLUSION

In view of the proposed amendments and remarks presented herein, Applicants respectfully submit that the claims as proposed to be amended define patentable subject matter. If questions should remain after consideration of the foregoing, the Examiner is kindly requested to contact Applicants' attorney at the address or telephone number given herein.

Respectfully submitted,



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